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		EXAMINER		
		ORTIZ RODRIGUEZ, CARLOS R		
		ART UNIT		PAPER NUMBER
		2123		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/530,504

**Applicant(s)**

BARLIER ET AL.

**Examiner**

CARLOS ORTIZ RODRIGUEZ

**Art Unit**

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 April 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 13-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 13-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SG/US)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. Claims 13-35 are pending.
2. Claims 1-12 are cancelled.
3. Claims 26-35 are new.

***Continued Examination Under 37 CFR 1.114***

4. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/16/09 has been entered.

***Response to Arguments***

5. Applicant's arguments filed 04/16/09 have been considered but are moot in view of the new ground(s) of rejection.

***Specification***

6. The amendment to the Specification received on 04/16/09 is accepted and entered.

***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claim 14-25 and 32-35 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Specifically, (Claim 14 Lines 3-4) recite the limitation: "an isolating circuit coupled with the fluid transport circuit". This limitation is not described in the Specification of the Instant Application.

Additionally, (Claim 32 Lines 3-4) recite the limitation: "a thermal barrier between the fluid transport circuit and the body of the part". This limitation is not described in the Specification of the Instant Application.

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 21 and 22 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Specifically, (Claim 21 Line 2) and (Claim 22 Line 2) recite the term: "the isolating circuit". It is unclear if the term "the isolating circuit" is referring to the "isolating circuit" mentioned in (Claim 20 Line 3) or if it is referring to the "isolating circuit" mentioned in (Claim 14 Lines 3-4).

***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically taught or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 13-17, 20-24 and 26-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi et al., "Design and Evaluation of a Laser-Cutting Robot for Laminated, Solid Freeform Fabrication", 2000 IEEE (hereinafter Choi) in view of Shaikh et al. U.S. Patent No. 5,847,958 (hereinafter Shaikh).

a. **Regarding claim 13**, Choi teaches a method for producing a mechanical part by computer-aided design including a preliminary step in which body portions of the part are broken down into elementary strata, followed by steps including manufacture of the elementary strata to form manufactured strata and reconstruction of the part by superposing and assembling the manufactured strata; breaking down the part into a plurality of elementary chambers as part of

the break-down of the part and during the break-down of the part; producing elementary chambers in the manufactured strata during the manufacture of the strata; and completely reconstructing the part during the superposition and the assembly of the manufactured strata (Fig 1 and Page 1551, Column 1, 3rd full paragraph).

But Choi fails to clearly specify defining at least one fluid transport circuit in the part; breaking down the fluid transport circuit into a plurality of elementary chambers as part of the break-down of the part and during the break-down of the part; producing the elementary chambers, corresponding to the fluid transport circuit, in the manufactured strata during the manufacture of the manufactured strata; and completely reconstructing the fluid transport circuit during the superposition and the assembly of the manufactured strata.

However, Shaikh teaches defining at least one fluid transport circuit in a part; breaking down the fluid transport circuit into a plurality of elementary chambers as part of a break-down of the part and during the break-down of the part; producing the elementary chambers, corresponding to the fluid transport circuit, in a manufactured strata during a manufacture of the manufactured strata; and completely reconstructing the fluid transport circuit during superposition and assembly of the manufactured strata (Abstract, Fig 1, Fig 5 and Fig 6, C3 L5-67, C4 - - see sectioning the graphic member into blocks/slabs; see that physical solid members are carved in a manner that, at the time of putting the blocks/slabs together, create passages/channels/fluid transport circuit).

Choi and Shaikh are analogous art because they are from the same field of endeavor. They both relate to machining three-dimensional objects.

Therefore at time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the above teachings taught by Choi and combining them with the teachings taught by Shaikh.

One of ordinary skill in the art would have been motivated to do this modification in order to rapidly make part utilizing economical techniques as suggested by Shaikh (C2 L5-10)

b. **Regarding claim 14**, the combination of Choi and Shaikh teaches all the limitations of the base claims as outlined above.

Shaikh further teaches the steps of: breaking down an isolating circuit coupled with the fluid transport circuit into elementary isolating chambers as part of the break-down of the part and during the break-down of the part; producing the elementary isolating chambers in the manufactured strata during the manufacture of the manufactured strata; and reconstructing the isolating circuit during the superposition and the assembly of the manufactured strata (Abstract, Fig 1, Fig 5 and Fig 6, C3 L5-67, C4). *Please note that it has been determined that this claim does not comply with the enablement requirement (see the above rejection under 35 U.S.C. 112, first paragraph). Therefore for examination purposes, the term "isolating circuit" and "fluid transport circuit" are being*

*considered as referring to the same circuit. This claim and its dependent claims have been given the broadest reasonable interpretation.*

c. **Regarding claim 15**, the combination of Choi and Shaikh teaches all the limitations of the base claims as outlined above.

Shaikh further teaches a mechanical part including a body having at least one fluid transport circuit comprised of a plurality of channels formed in the body at a predetermined distance from a heat exchange surface associated with the body (Abstract, Fig 1, Fig 5 and Fig 6, C3 L5-67, C4), wherein the fluid transport circuit is completely reconstructed during the assembly of the manufactured strata, and wherein the plurality of elementary chambers are provided in at least one portion of the manufactured strata and are placed in fluid-tight communication (Abstract, Fig 1, Fig 5 and Fig 6, C3 L5-67, C4).

d. **Regarding claim 16**, the combination of Choi and Shaikh teaches all the limitations of the base claims as outlined above.

Shaikh further teaches wherein, following reconstruction of the manufactured strata, the fluid transport circuit forms a three-dimensional network channels in the body of the part which follow or copy surface portions of the part at a predetermined distance from the surface portions (Abstract, Fig 1, Fig 5 and Fig 6, C3 L5-67, C4).



- e. **Regarding claim 17**, the combination of Choi and Shaikh teaches all the limitations of the base claims as outlined above.

Shaikh further teaches wherein, following reconstruction of the manufactured strata, the fluid transport circuit forms a layer-shaped chamber in the body of the part (Abstract, Fig 1, Fig 5 and Fig 6, C3 L5-67, C4).

- f. **Regarding claim 20**, the combination of Choi and Shaikh teaches all the limitations of the base claims as outlined above.

Shaikh further teaches which, following reconstruction of the manufactured strata, further includes an isolating circuit provided in at least one portion of the manufactured strata and having a plurality of elementary isolating chambers placed in fluid-tight communication (Abstract, Fig 1, Fig 5 and Fig 6, C3 L5-67, C4).

- g. **Regarding claim 21**, the combination of Choi and Shaikh teaches all the limitations of the base claims as outlined above.

Shaikh further teaches wherein the isolating circuit is comprised of a plurality of parallel channels (Abstract, Fig 1, Fig 5 and Fig 6, C3 L5-67, C4).

- h. **Regarding claim 22**, the combination of Choi and Shaikh teaches all the limitations of the base claims as outlined above.

Shaikh further teaches wherein the isolating circuit forms a layer-shaped chamber (Abstract, Fig 1, Fig 5 and Fig 6, C3 L5-67, C4).

i. **Regarding claim 23**, the combination of Choi and Shaikh teaches all the limitations of the base claims as outlined above.

A mechanical adhesive between the elementary strata on regions of the part extending from the channels to outside portions of the part, and an adhesive with a predetermined thermal conductivity on regions of the part extending from the fluid transport circuit to surface portions of the part is inherent to the system taught by Shaikh (Abstract, Fig 1, Fig 5 and Fig 6, C3 L5-67, C4 and C5 L63).

j. **Regarding claim 24**, the combination of Choi and Shaikh teaches all the limitations of the base claims as outlined above.

Shaikh further teaches wherein the fluid transport circuit is filled with a fluid selected from the group consisting of a heat exchange fluid, a thermal insulation fluid, a liquid material, a pulverulent material and a marking fluid (Abstract, Fig 1, Fig 5 and Fig 6, C3 L5-67, C4 - - see the intake and exhaust).

k. **Regarding claim 26**, the combination of Choi and Shaikh teaches all the limitations of the base claims as outlined above.

Shaikh further teaches that the elementary chambers are produced in the manufactured strata before the manufactured strata are reconstructed to form the fluid transport circuit (Abstract, Fig 1, Fig 5 and Fig 6, C3 L5-67, C4 and C5 L63).

l. **Regarding claim 27**, the combination of Choi and Shaikh teaches all the limitations of the base claims as outlined above.

Shaikh further teaches combining the elementary chambers of the fluid transport circuit to form a cooling circuit in the body of the part (Abstract, Fig 1, Fig 5 and Fig 6, C3 L5-67, C4 and C5 L63).

m. **Regarding claim 28**, the combination of Choi and Shaikh teaches all the limitations of the base claims as outlined above.

Shaikh further teaches combining the elementary chambers of the fluid transport circuit to form a three-dimensional network of channels in the body of the part (Abstract, Fig 1, Fig 5 and Fig 6, C3 L5-67, C4 and C5 L63).

n. **Regarding claim 29**, the combination of Choi and Shaikh teaches all the limitations of the base claims as outlined above.

Shaikh further teaches combining the elementary chambers of the fluid transport circuit to form a layer-shaped chamber in the body of the part (Abstract, Fig 1, Fig 5 and Fig 6, C3 L5-67, C4 and C5 L63).

- o. **Regarding claim 30**, the combination of Choi and Shaikh teaches all the limitations of the base claims as outlined above.

Shaikh further teaches wherein the step of producing the elementary chambers in the manufactured strata of the part further includes the step of forming the elementary chambers in surface portions of the manufactured strata, to a depth which is less than a defined thickness of the manufactured strata is inherent to the system taught by Shaikh (C3 L39-60, C4 L25-38, C5 L9-33 and Claim 13 - see that the depth of the chambers are limited to a depth less than the thickness of the block/slab).

- p. **Regarding claim 31**, the combination of Choi and Shaikh teaches all the limitations of the base claims as outlined above.

Shaikh further teaches the step of combining the elementary chambers of the fluid transport circuit with surface portions of adjacent manufactured strata, to form the fluid transport circuit (Abstract, Fig 1, Fig 5 and Fig 6, C3 L5-67, C4 and C5 L63).

13. Claim 18, 19, 25 and 32-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi et al., "Design and Evaluation of a Laser-Cutting Robot for Laminated, Solid Freeform Fabrication", 2000 IEEE (hereinafter Choi) in view of Shaikh et al. U.S. Patent No. 5,847,958 (hereinafter Shaikh) in view of Sachs et al. U.S. Patent No. 5,775,402 (hereinafter Sachs).

a. **Regarding claim 18** the combination of Choi and Shaikh teaches all the limitations of the base claims as outlined above.

But the combination of Choi and Shaikh fails to clearly specify wherein the fluid transport circuit includes a connection to a temperature regulating device

However, Sachs teaches a fluid transport circuit that includes a connection to a temperature regulating device (C14 I6-26).

Choi, Shaikh and Sachs are analogous art because they are from the same field of endeavor. They all relate to machining three-dimensional objects.

Therefore at time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the above teachings taught by the combination of Choi and Shaikh and combining them with the teachings taught by Sachs.

One of ordinary skill in the art would have been motivated to do this modification in order to increase the overall toughness of the part/tool as suggested by Sachs (see C5 L5-10).

b. **Regarding claim 19** the combination of Choi and Shaikh teaches all the limitations of the base claims as outlined above.

But the combination of Choi and Shaikh fails to clearly specify wherein interior portions of the fluid transport circuit include a plurality of transverse fins providing mechanical reinforcement and stirring the fluid.

However, Sachs teaches wherein interior portions of a fluid transport circuit include a plurality of transverse fins providing mechanical reinforcement and stirring the fluid (C4 L47-49 and C10 L66).

Choi, Shaikh and Sachs are analogous art because they are from the same field of endeavor. They all relate to machining three-dimensional objects.

Therefore at time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the above teachings taught by the combination of Choi and Shaikh and combining them with the teachings taught by Sachs.

One of ordinary skill in the art would have been motivated to do this modification in order to increase the overall toughness of the part/tool as suggested by Sachs (see C5 L5-10).

c. **Regarding claim 25** the combination of Choi and Shaikh teaches all the limitations of the base claims as outlined above.

But the combination of Choi and Shaikh fails to clearly specify wherein the mechanical part is a mold.

However, Sachs teaches wherein a mechanical part is a mold (Abstract).

Choi, Shaikh and Sachs are analogous art because they are from the same field of endeavor. They all relate to machining three-dimensional objects.

Therefore at time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the above teachings taught by the

combination of Choi and Shaikh and combining them with the teachings taught by Sachs.

One of ordinary skill in the art would have been motivated to do this modification in order to increase the overall toughness of the part/tool as suggested by Sachs (see C5 L5-10).

d. **Regarding claim 32** the combination of Choi and Shaikh teaches all the limitations of the base claims as outlined above.

But the combination of Choi and Shaikh fails to clearly specify forming a thermal barrier between the fluid transport circuit and the body of the part.

However, Sachs teaches forming a thermal barrier between a fluid transport circuit and a body of a part (Abstract).

Choi, Shaikh and Sachs are analogous art because they are from the same field of endeavor. They all relate to machining three-dimensional objects.

Therefore at time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the above teachings taught by the combination of Choi and Shaikh and combining them with the teachings taught by Sachs.

One of ordinary skill in the art would have been motivated to do this modification in order to increase the overall toughness of the part/tool as suggested by Sachs (see C5 L5-10).

*Please note that it has been determined that this claim does not comply with the enablement requirement (see the above rejection under 35 U.S.C. 112, first paragraph). Therefore for examination purposes, this claim and its dependent claims are given the broadest reasonable interpretation.*

q. **Regarding claim 33**, the combination of Choi, Shaikh and Sachs teaches all the limitations of the base claims as outlined above.

Sachs further teaches forming a thermal barrier as a continuous thermal barrier (Abstract).

r. **Regarding claim 34**, the combination of Choi, Shaikh and Sachs teaches all the limitations of the base claims as outlined above.

Sachs further teaches forming a network of follower channels in a body of a part (Abstract).

s. **Regarding claim 35**, the combination of Choi, Shaikh and Sachs teaches all the limitations of the base claims as outlined above.

Shaikh further teaches forming a layer-shaped chamber in a body of a part (Abstract).



**Conclusion**

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carlos Ortiz-Rodriguez whose telephone number is 571-272-3766. The examiner can normally be reached on Mon-Fri 10:00 am- 6:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached on 571-272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Carlos Ortiz-Rodriguez  
Patent Examiner  
Art Unit 2123

July 7, 2009

/Kideest Bahta/  
Primary Examiner, Art Unit 2123